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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,551	08/30/2000	David J. McElroy	303.615US1	1374

7590

03/04/2002

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EXAMINER

LUU, THANH X

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 03/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/650,551

Applicant(s)

MCELROY ET AL.

Examiner

Thanh X Luu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 and 22-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 7-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Pri ority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-6, drawn to a pixel summing circuit, classified in class 250, subclass 208.1.
 - II. Claims 7-21, drawn to a pixel gain adjusting circuit, classified in class 250, subclass 214AG.
 - III. Claim 22, drawn to a method for compensating for defective photodetectors in an imaging array, classified in class 348, subclass 246.
 - IV. Claims 23-27, drawn to a method for determining a number of defective pixels and amplifying the pixel signals, classified in class 250, subclass 214.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions of Groups I, II, III and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions. For instance, the invention of Group I simply sums pixel signals, without mention of amplifying, defect compensation or defective pixels. The invention of Group II adjusts the gain of a pixel amplifier and does not mention the number defective pixels or pixel compensation.
3. Because these inventions are distinct for the reasons given above and have

acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Eduardo Drake on February 25, 2002 a provisional election was made without traverse to prosecute the invention of Group II, claims 7-21. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-6 and 22-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "automatic gain controller for adjusting the adjustable amplifier gain based on the aggregate image signal" (of claims 7 and 13) and "the summer comprises an analog-to-digital converter" (of claims 8, 11, 14, 17 and 20) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 7 and 10, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto et al. (U.S. Patent 3,906,389).

Regarding claims 7 and 10, Matsumoto et al. disclose (see Figure 1) an imaging system comprising: a group pixel comprising two photodetectors (PD1, PD2) for providing two corresponding pixel image signals; a summer (AA) responsive to the two signals for outputting an aggregate image signal; a variable-gain amplifier (AS) responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and an automatic gain controller (D) for adjusting the adjustable amplifier gain based on the aggregate image signal or the amplified aggregate image signal. That is, the amplified aggregate image signal comprises the aggregate image signal.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 8, 9, 11 and 12, as understood, are rejected under 35 U.S.C. 103(a) as

being unpatentable over Matsumoto et al.

Regarding claims 8, 9, 11 and 12, Matsumoto et al. do not specifically disclose an A/D converter or a digital amplifier. However, it is notoriously well known in the art that digital signals are more robust than analog signals. Furthermore, it is well known that microprocessors handle digital signals more readily than analog signals. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an A/D converter and a digital amplifier in the apparatus of Matsumoto et al. to provide more noise resilient signals and also allow for faster processing by microprocessors.

11. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smitt (U.S. Reissued Patent RE 37,282) in view of Clark et al. (U.S. Patent 6,133,563).

Regarding claims 13-21, Smitt discloses (see Figure 3) an imaging system comprising: two or more group pixels comprising two or more photodetector circuits (1a, 1b, 1c) for providing two or more corresponding pixel image signals; a summer (26, 27) responsive to two or more of the pixel image signals for outputting an aggregate image signal; a variable gain amplifier (29) responsive to the aggregate image signal for outputting an amplified aggregate signal based on an adjustable amplifier gain; and an automatic gain controller (25, 10, 15) for adjusting the gain based on the aggregate image signal or the amplified aggregate image signal. Smitt does not specifically disclose the photodetector circuit as claimed. Clark et al. teaches (see Figure 1) conventional pixels comprises a source-follower transistor (16) having a gate, source and drain; a ground node; and a photodiode (12) coupled between the gate of the

source-follower transistor and the ground node. Smitt further disclose the summer comprises an A/D converter and the amplifier being a digital amplifier. Pixels come in all shapes and sizes. The specific surface area of the photodetector circuit is a matter of design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a pixel configuration in the apparatus of Smitt in view of Clark et al. as conventionally known.


Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kapan (U.S. Patent 5,291,293) teaches of a similar pixel defect correction device.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham, can be reached on (703) 308-4090. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
February 27, 2002


Que T. Le
Primary Examiner